

FACT SHEET

The United States Environmental Protection Agency (EPA), Region 10
Proposes to Reissue A
National Pollutant Discharge Elimination System (NPDES) permit to:

Washington Beef LLC
P.O. Box 832
201 Elmwood Road
Toppenish, Washington 98948

Permit Number: WA-005020-2

Public Notice start date: January 4, 2006

Public Notice expiration date: February 3, 2006

EPA Proposes NPDES Permit Reissuance.

EPA proposes to reissue an NPDES permit to Washington Beef LLC (hereafter referred to as “Washington Beef”), the owner and operator of a complex slaughterhouse facility located in Toppenish, Washington on the Yakama Indian Reservation. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility to Wanity Slough. The NPDES program is the primary permitting system under the federal Clean Water Act which governs all discharges to the nation’s surface water.

EPA is reopening the public comment period for the draft NPDES permit for Washington Beef. The original draft of this permit was released by EPA for public review in April 2004. Based upon new information submitted by Washington Beef, EPA has revised the draft permit and fact sheet. Since substantive changes were made to the permit, EPA has decided to re-open the public comment period.

This Fact Sheet includes:

- information on public comment, public hearing and appeal procedures,
- a description of the discharge,
- a listing of proposed effluent limitations and other conditions,
- a listing of proposed receiving water monitoring requirements;
- a map and description of the discharge location and
- detailed technical material supporting the conditions in the permit.

Public Comment

Persons wishing to comment on or request a public hearing concerning the draft NPDES permit may do so in writing by the expiration date of the Public Notice. A request for a public hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments section of the attached Public Notice.

After the Public Notice expires and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final determination regarding permit reissuance.

If no substantive comments are received, the tentative conditions in the draft permit will become final and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the final permit. The permit will become effective no less than 30 days after the issuance date unless a request for an evidentiary hearing is submitted within 30 days.

Documents are Available for Review.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's regional office in Seattle, Washington between 8:30 a.m. and 4:00 p.m., Monday through Friday (see address below). Draft permits, Fact Sheets and other information can also be found by visiting EPA Region 10's website at www.epa.gov/r10earth/water/npdes.htm.

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW - 130
Seattle, Washington 98101
(206) 553-0060 or 1-800-424-4372 ext 0060 (within Alaska, Idaho, Oregon and Washington).

The Fact Sheet and draft permit are also available at:

United States Environmental Protection Agency (EPA)
Washington Operations Office
300 Desmond Dr. SE, Suite 102
Lacey, WA 98503
(360) 753-9457

Yakama Indian Nation
Department of Natural Resources
Environmental Management Program
P.O. Box 151
Toppenish, Washington 98948

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I. APPLICANT

Washington Beef LLC
NPDES Permit Number: WA-005020-2
Facility Contact: Gary Hyatt, Processing Division Manager

<u>Facility Mailing Address:</u>	<u>Facility Location:</u>
P.O. Box 832	201 Elmwood Road
Toppenish, Washington 98948	Toppenish, Washington 98948

II. FACILITY INFORMATION

A. Facility Description

Washington Beef LLC (Washington Beef), a wholly owned subsidiary of Agri Beef Co., owns, operates, and has maintenance responsibility for a complex slaughterhouse facility (Standard Industrial Code "SIC" 2011) located on the Yakima Indian Reservation in Toppenish, Washington. The NPDES permit application (dated September 24, 2002) indicates that the facility processes approximately 1,250,000 pounds live weight kill (LWK) which is defined as the total weight of the maximum number of animals slaughtered during any single day (see federal regulations 40 CFR Part 432 Subpart B - Complex Slaughterhouse Subcategory). The facility includes a live animal holding area and beef cattle slaughter house with associated facilities for rendering, meat processing, hide brining and boxing meat warehousing and shipping.

In response to the previous draft permit, Washington Beef submitted additional information to EPA (dated June 24, 2004) which specified that process wastewater is managed using one of the following three alternatives:

- 1) discharge to Wanity Slough,
- 2) land application or
- 3) discharge to Spencer Lateral.

With regard to the discharge to Wanity Slough, process wastewater is discharged from Outfall 002 directly to Wanity Slough, a tributary to the Yakima River. With regard to both land application and the discharge to Spencer Lateral, process wastewater flows through three artificially constructed wetlands. After flowing through the wetlands, process wastewater is either land applied or discharged to Spencer Lateral. Approximately 40 acres of property owned by Washington Beef is proposed for onsite wastewater land application. In addition, wastewater is discharged to Spencer Lateral pursuant to a cooperative agreement with the Wapato Irrigation Project (WIP). Spencer Lateral flows into Wanity Slough or Harris Drain, and then to the Yakima River. A revised process flow diagram is included in Appendix A and a map showing the location of the Washington Beef facility is included in Appendix B.

B. Permit History

Any new source, as defined in 40 CFR §§ 122.2 and 122.29 that proposes to discharge pollutants to waters of the United States must apply for an NPDES permit. The Washington Beef facility is a new source pursuant to these regulations.

EPA issued an NPDES permit in 1994 that expired on March 31, 1999. Prior to the expiration of the permit, Washington Beef submitted a permit renewal application (dated September 29, 1998). Thus, pursuant to 40 CFR §§ 122.6 and 122.21(d), the permit was administratively extended and continues to be in effect until a new permit is issued.

In a letter dated August 26, 2002, EPA notified Washington Beef that the agency was in the process of drafting a new permit and requested an updated permit application as well as all monitoring data for the effluent and receiving water to ensure the new permit accurately reflects conditions at the facility. On September 30, 2002, EPA received a revised NPDES permit application for the facility along with the requested monitoring data for the effluent from Outfalls 001 and 002 and the receiving water (*i.e.* Wanity Slough).

On April 28, 2004, EPA issued a public notice for the proposed draft permit. The draft permit included effluent limitations and monitoring requirements for five (5) outfalls that discharge to Wanity Slough. Washington Beef submitted comments on June 24, 2004 in response to the proposed draft permit. Washington Beef also submitted supplemental information on February 7, 2005 in response to EPA's request for information (dated January 5, 2005).

C. Plant Performance History

Information from the monitoring results and the permit application were used in determining applicable effluent limitations for the facility (see Section IV below).

The following table summarizes the plant performance based on a review of the monitoring results from January 1999 to December 2004.

SUMMARY OF PLANT PERFORMANCE (Outfall 002)		
Parameter	Units	Plant Performance
Flow	mgd	0.110 - 0.875
Biochemical Oxygen Demand (BOD ₅)	mg/l	5 - 112
Total Suspended Solids (TSS)	mg/l	4 - 260
Turbidity	NTU	1 - 44
Fecal Coliform Bacteria	colonies/100 ml	2 - 16,000

SUMMARY OF PLANT PERFORMANCE (Outfall 002)		
Parameter	Units	Plant Performance
pH	s.u.	6.53 - 8.42
Temperature	°F	46.8 - 77.0
Total Ammonia	mg/l	0.1 - 48.5

III. RECEIVING WATER

A. Outfall Location and Description

Effluent from the facility is discharged into either Wanity Slough or Spencer Lateral as specified below:

Outfall	Latitude	Longitude	Description	Flow
001	N 46° 22' 27"	W 120° 19' 15"	non-contact cooling water	0.02 mgd
002	N 46° 22' 21"	W 120° 19' 15"	process wastewater	0.68 mgd
005	N 46° 22' 26"	W 120° 19' 15"	drinking trough overflow	0.0002 mgd
006	N 46° 22' 26"	W 120° 19' 15"	drinking trough overflow	0.0002 mgd
007	N 46° 22' 26"	W 120° 19' 15"	drinking trough overflow	0.0002 mgd
Spencer Lateral	N 46° 22' 16"	W 120° 19' 15"	process wastewater	0.68 mgd

Flow from the Yakima River is diverted into the Wanity Slough near Parker, Washington (approximately 10 miles north of Toppenish, Washington) and continues south, entering the Marion Drain and then the Yakima River just south of Granger, Washington. Flow in Spencer Lateral enters into Wanity Slough or Harris Drain and then to the Yakima River. See Appendix B for the locations of the discharge and receiving waters.

B. Water Quality Standards

Federal regulations 40 CFR §122.44(d)(1)(vii) specifies that, when developing water quality-based effluent limits, the permitting authority shall ensure that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards. In addition, 40 CFR §122.44(d)(1)(i) requires NPDES permits to include limits for all pollutants or parameters which “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” The Yakama Nation currently has no EPA-approved

water quality standards. Therefore, to develop the effluent limitations of this permit, EPA has used the *Water Quality Standards for Surface Waters of the State of Washington* (Washington State Water Quality Standards) as guidance. These Washington State Water Quality Standards are applicable to the Yakima River. Wanity Slough and Spencer Lateral are both tributaries to the Yakima River. This approach ensures that the permit contains limitations and monitoring requirements that protect tribal waters and ensures that the discharge will not cause impairment of the Washington State Water Quality Standards that are applicable to downstream state waters (*i.e.*, the Yakima River).

Water quality standards consist of use classifications and numeric and/or narrative water quality criteria. The use classification system designates the beneficial uses (such as cold water biota, salmonid spawning, contact recreation, etc.) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary, by the State, to protect the beneficial use classification of each water body. The State's antidegradation policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality meets the standard. The antidegradation policy is summarized in Appendix F.

The Washington State Water Quality Standards specify that all unclassified surface waters are considered Class A unless they are tributaries to Class AA waters. See Washington Administrative Code (WAC) 173-201A-120. Washington State Water Quality Standards classify the Yakima River from the mouth to Cle Elum River (river mile 185.6) as Class A. See WAC 173-201A-130-141. Therefore, Wanity Slough is considered a Class A stream.

Appendix C of this fact sheet discusses Washington State Water Quality Standards in more detail and conditions proposed in the draft permit.

Information provided by Washington Beef suggested different classifications for Wanity Slough and the Yakima River. See Appendix B. The potential classifications provided by Washington Beef relate to the 303(d) impaired water body assessments that the State is required to conduct pursuant to Clean Water Act Section 303(d), 33 USC § 1313(d). Specifically, the classifications relate to the level of impairment the State assigned to a particular water body (*i.e.*, Categories 1, 2, 4A, 4B, 4C, and 5). Since these classifications do not relate to Washington State Water Quality Standard classifications, EPA has determined that it is more appropriate to use the State Water Quality Standard classifications, as set forth in the above paragraphs.

IV. PROPOSED EFFLUENT LIMITATIONS

A. Basis for Effluent Limitations

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. See CWA § 301(b), 33 USC § 1311(b). A technology-based effluent limit requires a minimum level of treatment for a point source based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a water body are being met. The basis for the proposed effluent limits in the draft permit are provided in Appendix C.

B. Proposed Effluent Limitations

Tables 1-3 and the following list summarize the proposed effluent limitations in the draft permit. For comparison purposes, Table 1 and 2 also includes the effluent limitations of the current permit.

Table 1: Proposed and Current Effluent Limitations for Outfall 001							
Parameter	Units	Average Monthly		Maximum Daily		Minimum Daily	
		Proposed	Current	Proposed	Current	Proposed	Current
Outfall Flow	Mgd	--	0.99	--	0.99	--	--
pH	s.u.	--	--	8.5	--	6.5	--
Temperature	C	--	--	18	18	--	--

Table 2: Proposed and Current Effluent Limitations for Outfall 002							
Parameter	Units	Average Monthly		Maximum Daily		Minimum Daily	
		Proposed	Current	Proposed	Current	Proposed	Current
Outfall Flow	mgd	--	0.8	--	0.9	--	--
Biochemical Oxygen Demand (BOD ₅)	mg/L	46.1	30	48.2	45	--	--
	lbs/day	263 ¹	204	274 ¹	357	--	--
Total Suspended Solids (TSS)	mg/L	54.9 ¹	30	109.7 ¹	45	--	--
	lbs/day	313 ²	204	625 ²	357	--	--
Oil and Grease	mg/L	10	10	15	15	--	--
	lbs/day	57 ¹	68.0	85 ¹	118.9	--	--
Fecal Coliform Bacteria ^{3, 5}	# / 100 ml	100	100	400 ⁴	--	--	--
pH	s.u.	--	--	8.5	8.5	6.5	6.5
Temperature	C	--	--	18	18	--	--
Turbidity	NTU	30.3	--	60.4	--	--	--
Total Nitrogen	mg/L	134	--	194	--	--	--
	lbs/day ¹	763	--	1,105	--	--	--
Total Ammonia as N ⁵	mg/L	2.0 ⁶	3.4	6.6 ⁶	8.2	--	--
	lbs/day	11.6 ^{1, 7}	23.1	37.8 ^{1, 7}	65.0	--	--

Table 2: Proposed and Current Effluent Limitations for Outfall 002							
Parameter	Units	Average Monthly		Maximum Daily		Minimum Daily	
		Proposed	Current	Proposed	Current	Proposed	Current
¹ Effluent limits based on a 95 th percentile daily flow of 682,834 gallons per day.							
² Effluent limits based on production rate of 1,250,000 lbs live weight kill (LWK) per day.							
³ No more than 10% of all samples collected for the month shall exceed 200 colonies/100 ml.							
⁴ Any single sample shall not exceed this limit.							
⁵ Reporting is required within 24-hours if the maximum daily limit is violated.							
⁶ Effluent limits will become effective three years after the effective date of the permit. Interim limits for total ammonia will be the current daily maximum and average monthly limits of 8.2 and 3.4 mg/l, respectively.							
⁷ Effluent limits will become effective three years after the effective date of the permit. Interim limits for total ammonia will be the current daily maximum and average monthly limits of 65.0 and 23.1 lbs/day, respectively.							

Table 3: Proposed Effluent Limitations for Outfall to Spencer Lateral				
Parameter	Units	Average Monthly	Maximum Daily	Minimum Daily
		Proposed	Proposed	Proposed
Biochemical Oxygen Demand (BOD ₅)	mg/L ¹	46.1	92.2	--
	lbs/day ²	263	525	--
Total Suspended Solids (TSS)	mg/L ¹	54.9	109.7	--
	lbs/day ²	313	625	--
Oil and Grease	mg/L ¹	17.6	35.1	--
	lbs/day ²	100	200	--
Fecal Coliform Bacteria ³	# / 100 ml	100	400 ⁴	--
pH	s.u.	--	8.5	6.5
Temperature	C	--	18	--
Total Nitrogen	mg/L	134	194	--
	lbs/day ¹	763	1,105	--
Total Ammonia as N ⁵	mg/L	4.0	8.0	--
	lbs/day ¹	22.8	45.6	--
¹ Effluent limits based on a 95 th percentile daily flow of 682,834 gallons per day. ² Effluent limits based on production rate of 1,250,000 lbs live weight kill (LWK) per day. ³ No more than 10% of all samples collected for the month shall exceed 200 colonies/100 ml. ⁴ Any single sample shall not exceed this limit. ⁵ Reporting is required within 24-hours if the maximum daily limit is violated.				

In addition to the requirements listed above, the following limitations shall also apply:

1. The permit does not authorize the discharge of any waste streams, including spills and other unintentional or non-routine discharges of pollutants, that are not part of the normal operation of the facility as disclosed in the permit application, or any pollutants that are not ordinarily present in such waste streams.
2. There shall be no discharge of toxic pollutants, radioactive or deleterious materials in concentrations which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic conditions to the most

sensitive biota dependent upon those waters, or adversely affect public health (Section 101(a)(3) of the Clean Water Act).

3. There shall be no discharge of floating solids, visible foam, or oily wastes which produce a sheen on the surface of the receiving water.

V. MONITORING REQUIREMENTS

A. Basis for Effluent and Receiving Water Monitoring Requirements

Section 308 of the Clean Water Act and federal regulation 40 CFR §122.44(i) requires that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results with Discharge Monitoring Reports (DMRs) to EPA.

B. Proposed Effluent Monitoring Requirements

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Table 4 presents the effluent monitoring requirements in the draft permit.

Table 4: Proposed Monitoring Requirements for Outfalls 001, 002, 005, 006 and 007 and Spencer Lateral Outfall							
Parameter	Units	Sample Frequency					
		Outfall 001	Outfall 002	Outfall 005	Outfall 006	Outfall 007	Spencer Lateral
Outfall Flow	gpd	weekly	daily	weekly	weekly	weekly	daily
Biochemical Oxygen Demand (BOD ₅)	mg/L	monthly	weekly	quarterly	quarterly	quarterly	weekly
Total Suspended Solids (TSS)	mg/L	monthly	weekly	quarterly	quarterly	quarterly	weekly
Oil and Grease	mg/L	---	weekly	---	---	---	weekly
Fecal Coliform Bacteria	# / 100 ml	---	weekly	quarterly	quarterly	quarterly	weekly
pH	s.u.	weekly	daily	quarterly	quarterly	quarterly	daily
Temperature	C	weekly	daily	quarterly	quarterly	quarterly	daily
Dissolved Oxygen	mg/L	monthly	weekly	quarterly	quarterly	quarterly	weekly
Total Ammonia as N	mg/L	monthly	weekly	quarterly	quarterly	quarterly	weekly
Turbidity	NTU	monthly	weekly	quarterly	quarterly	quarterly	weekly
Whole Effluent Toxicity (WET) – Chronic	TU _c	---	semi-annual	---	---	---	semi-annual

C. Proposed Receiving Water Monitoring Requirements

The purpose of receiving water monitoring is to determine water quality conditions as part of the effort to evaluate the reasonable potential for the discharge to cause the receiving waters to not meet state water quality criteria (40 CFR §122.44). Table 5 summarizes the receiving water monitoring requirements proposed in the draft permit.

Table 5: Receiving Water Monitoring Requirements					
Parameter	Units	Sample Frequency		Sample Type	
		Wanity Slough	Spencer Lateral	Wanity Slough	Spencer Lateral
Flow	gpd	weekly	weekly	measurement	measurement
Biochemical Oxygen Demand (BOD ₅)	mg/L	monthly	monthly	grab	grab
Dissolved Oxygen	mg/L	monthly	monthly	grab	grab
pH	s.u.	weekly	weekly	grab	grab
Temperature	C	weekly	weekly	grab	grab
Total Ammonia as N	mg/L	monthly	monthly	grab	grab
Turbidity	NTU	monthly	monthly	grab	grab

VI. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP)

40 CFR §122.41(e) requires the permittee to ensure adequate laboratory controls and appropriate quality assurance procedures in order to properly operate and maintain all facilities which it uses. Therefore, the draft permit requires the permittee to develop a QAP that will: (1) assist in planning for the collection and analysis of samples in support of the permit, (2) ensure that the monitoring data submitted is accurate and (3) explain data anomalies if they occur. The QAP shall consist of standard operating procedures that the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The permittee is required within 60 days of the effective date of the draft permit to implement the QAP and notify EPA. The QAP must be retained on site at all times and made available to the Director or his/her representative upon request.

EPA recommends the following references when developing an adequate QAP:

- ♦ Requirements for Quality Assurance Project Plans, EPA QA/R-5.
- ♦ Guidance for Preparation of Quality Assurance Project Plans, EPA, Region 10, Quality and Data Management Program, QA/G-5
- ♦ You and Quality Assurance in Region 10, EPA, Region 10, Quality and Data Management Program, March 1988.
- ♦ The Volunteer Monitors Guide to Quality Assurance Project Plans, EPA 841-B-96-003, September 1996.

- ♦ Internet site: <http://www.epa.gov/r10earth/offices/oea/qaindex.htm>.

B. Best Management Practices (BMP) Plan

Section 402 of the Clean Water Act and federal regulation 40 CFR §122.44(k) authorize EPA to require BMPs in NPDES permits, when applicable. BMPs are measures for controlling the generation of pollutants and their release to waterways. These measures are typically included in the facility Operation & Maintenance (O&M) plans and are important tools for waste minimization and pollution prevention.

The draft permit requires that the permittee develop a BMP plan and implement BMPs within 60 days of the effective date of the draft permit. EPA has a guidance manual (EPA, 1993) that may provide some assistance in the development of BMPs. Specifically, the permittee must consider spill prevention and control, optimization of chemical use and water conservation. Furthermore, it is considered a good management practice to maintain a log of daily plant operations and observations. To the extent that any of these issues have already been addressed, the permittee need only reference the appropriate document/section in its O&M plan. Additionally, the BMP plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants.

The permit also includes specific BMPs for the discharges from Outfalls 005, 006 and 007. The wastewater discharged from Outfalls 005, 006 and 007 consists of the overflow from the drinking water troughs located in the holding pens. The discharges are located within 180 meters of Outfall 001 (see Appendix B), therefore, to ensure that the cumulative impact of these discharges does not cause or contribute to a violation of a water quality standard, the draft permit proposes effluent monitoring for these outfalls as well as the following BMPs:

“Wastewater discharged from Outfalls 005, 006 and 007 shall not come in contact with any raw materials, products or byproducts including, but not limited to, manure, litter, bedding or other material associated with the holding pens prior to discharge.”

C. Whole Effluent Toxicity (WET) Testing

Section 101(a)(3) of the Clean Water Act require surface waters of the state to be free from toxic substances in concentrations that impair designated beneficial uses. In addition, federal regulation at 40 CFR §122.44(d)(1) requires whole effluent data and criteria when characterizing effluents. The WET approach incorporates laboratory tests that use small vertebrate and invertebrate species or plants to measure the aggregate effect of all toxicants in the effluent.

The current permit specified acute toxicity testing using rainbow trout (*Oncorhynchus mykiss*) and chronic toxicity testing using fathead minnow (*Pimephales promelas*) and water flea (*Ceriodaphnia dubia*). The following table summarizes the test results:

Date	Parameter	<i>C. dubia</i>		<i>P. promelas</i>		<i>O. mykiss</i>
		Survival	Reproduction	Survival	Reproduction	Survival
December 1994	NOEC	25%	6.25%	100%	100%	100%
	Toxic Units (TU)	4	16	< 1	< 1	< 1
March 1995	NOEC	100%	50%	100%	100%	100%
	Toxic Units (TU)	< 1	2	< 1	< 1	< 1
May 1995	NOEC	100%	100%	100%	100%	100%
	Toxic Units (TU)	< 1	< 1	< 1	< 1	< 1
August 1995	NOEC	100%	100%	100%	100%	100%
	Toxic Units (TU)	< 1	< 1	< 1	< 1	< 1
October 1995	NOEC	100%	25%	100%	100%	100%
	Toxic Units (TU)	< 1	4	< 1	< 1	< 1

EPA has evaluated Washington Beef's discharge in accordance with EPA's policy for controlling the discharge of toxic substances. The draft permit proposes a narrative standard that the facility shall not discharge chemicals or toxic pollutants in toxic amounts. In addition, based on the previous test results and recommendations in the *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA, 1991) that specify a minimum of ten samples in order to quantify effluent variability and determine reasonable potential, the draft permit includes a semi-annual monitoring frequency for chronic toxicity using the most sensitive species, *Ceriodaphnia dubia*.

VII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act of 1973

Section 7 of the Endangered Species Act requires Federal agencies to consult with the National Oceanic and Atmospheric Administration-Fisheries (NOAA-Fisheries) and the U. S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. EPA has determined that the issuance of this permit will not affect any of the threatened or endangered species in the vicinity of the discharge (see Appendix D for further details).

B. Essential Fish Habitat (EFH)

EFH is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act

requires EPA to consult with the NOAA-Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. EPA has tentatively determined that the reissuance of this permit will not adversely affect any EFH species in the vicinity of the discharge, therefore consultation is not required for this action. This fact sheet and the draft permit will be submitted to NOAA-Fisheries for review during the public notice period. Any recommendations received from NOAA-Fisheries regarding EFH will be considered prior to final reissuance of this permit. See Appendix E for further details.

C. Water Quality Standards Certification

Since the discharge is from a facility located within the boundaries of the Yakama Indian Reservation, the provisions of Section 401 of the Clean Water Act requiring state certification of the permit do not apply.

D. Interstate Waters

Under 40 CFR §124.10 (c)(1)(iii), EPA must give notice of this permit action to any affected state. Notice has been given to Washington Department of Ecology and other Washington state agencies (as defined in this regulation) potentially impacted by this action. A copy of the proposed permit action has also been provided to the Yakama Indian Tribe, Bureau of Indian Affairs, and Bureau of Land Management.

E. Standard Permit Provisions

Sections II, III, IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

F. Permit Expiration

Section 402(1)(B) of the Clean Water Act requires that NPDES permits are issued for a period not to exceed five years. Therefore, this permit will expire five years from the effective date of the permit.

G. Facility Changes or Alterations

In accordance with 40 CFR §122.41(l), the facility is required to notify EPA and the Yakama Nation's Environmental Management Program of any planned physical alteration or operational changes to the facility. This requirement has been incorporated into the proposed permit to ensure that EPA and the Yakama Nation are notified of any potential increases or changes in the amount of pollutants being discharged and evaluate the impact of the pollutant loading on the receiving water.

VIII. REFERENCES

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. U.S. Environmental Protection Agency, Office of Water, EPA/505/2-90-001, March 1991.

EPA. 1993. *Guidance Manual for Developing Best Management Practices (BMP)*. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-93-004.

EPA. 1996. *U.S. EPA NPDES Permit Writer's Manual*. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-96-003.

IX. ACRONYMS

BMPs	Best management practices
BOD	Biochemical oxygen demand
BOD ₅	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
LA	load allocation
lb	pounds
mg/L	milligrams per liter
µg/L	micrograms per liter
mL	milliliter
N	Nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric turbidity units
OW	Office of Water
QAP	Quality assurance plan
s.u.	Standard units
sp.	Species
TSD	Technical Support Document (EPA, 1991)
TSS	Total suspended solids
TU _c	Chronic toxic unit
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WQBEL	Water quality-based effluent limit

APPENDIX A
PROCESS DIAGRAM

APPENDIX B

MAPS

APPENDIX C

BASIS FOR EFFLUENT LIMITATIONS

I. Statutory and Regulatory Basis for Effluent Limits

Sections 101, 301(b), 304, 308, 401, 402 and 405 of the Clean Water Act provide the statutory basis for establishing the effluent limitations and other conditions in the draft permit. EPA evaluates discharges with respect to these sections of the Clean Water Act as well as the relevant NPDES regulations in determining which conditions to include in the permit.

II. Technology-Based Limits

In general, EPA first determines which technology-based limits are required to be incorporated into the permit (40 CFR §122.44(a)) as well as best management practices (BMPs) and other applicable requirements. Washington Beef is an industrial discharger for which technology-based effluent limitations are based on two general approaches: (1) using national effluent limitations guidelines (ELGs) or (2) using Best Professional Judgement (BPJ) on a case-by-case basis in the absence of ELGs. ELGs have been promulgated for discharges from slaughterhouse facilities (40 CFR Part 432). Federal regulations 40 CFR §§432.25 and 432.26 (Subpart B - Complex Slaughterhouse Subcategory) are applicable to discharges resulting from the production of red meat carcasses, in whole or part, by complex slaughterhouses, like Washington Beef, and specify standards of performance for BOD₅, TSS, oil and grease, total ammonia, total nitrogen, pH and fecal coliform bacteria. Daily and monthly average limits are specified for BOD₅, TSS and oil and grease based on live weight killed (LWK) which is the total weight of the total number of animals slaughtered during the specified time period (e.g., pounds per day, pounds per month, etc.). Total ammonia and total nitrogen are specified as concentration-based effluent limits. In addition, federal regulations 40 CFR §122.45(f) require that NPDES permits must also express the effluent limits in terms of mass-based limits. Therefore, mass-loading limits were determined based on the plant design capacity of 1,250,000 pounds LWK per day and calculated as shown below.

A. Calculations

1. Biological Oxygen Demand (BOD₅)

Monthly Average Loading

$$= (1,250,000 \text{ lbs LWK} / \text{day}) \times (0.21 \text{ lbs}/1000 \text{ lbs LWK}) = 262.5 \text{ lbs/day}$$

Maximum Daily Loading

$$= (1,250,000 \text{ lbs LWK} / \text{day}) \times (0.42 \text{ lbs}/1000 \text{ lbs LWK}) = 525.0 \text{ lbs/day}$$

Monthly Average Concentration

$$= (262.5 \text{ lbs/day}) / [(8.34 \times 10^{-6}) \times (682,834 \text{ gallons/day})] = 46.1 \text{ mg/l}$$

Maximum Daily Concentration

$$= [(525.0 \text{ lbs/day}) / (8.34 \times 10^{-6})] \times (682,834 \text{ gallons/day}) = 92.2 \text{ mg/l}$$

2. Total Suspended Solids (TSS)

Monthly Average Loading

$$= (1,250,000 \text{ lbs LWK} / \text{day}) \times (0.25 \text{ lbs}/1000 \text{ lbs LWK}) = 312.5 \text{ lbs/day}$$

Maximum Daily Loading

$$= (1,250,000 \text{ lbs LWK} / \text{day}) \times (0.50 \text{ lbs}/1000 \text{ lbs LWK}) = 625.0 \text{ lbs/day}$$

Monthly Average Concentration

$$= (312.5 \text{ lbs/day}) / [(8.34 \times 10^{-6}) \times (682,834 \text{ gallons/day})] = 54.9 \text{ mg/l}$$

Maximum Daily Concentration

$$= [(625.0 \text{ lbs/day}) / (8.34 \times 10^{-6})] \times (682,834 \text{ gallons/day}) = 109.7 \text{ mg/l}$$

3. Oil and Grease

Monthly Average Loading

$$= (1,250,000 \text{ lbs LWK} / \text{day}) \times (0.08 \text{ lbs}/1000 \text{ lbs LWK}) = 100.0 \text{ lbs/day}$$

Maximum Daily Loading

$$= (1,250,000 \text{ lbs LWK} / \text{day}) \times (0.16 \text{ lbs}/1000 \text{ lbs LWK}) = 200.0 \text{ lbs/day}$$

Monthly Average Concentration

$$= (100.0 \text{ lbs/day}) / [(8.34 \times 10^{-6}) \times (682,834 \text{ gallons/day})] = 17.6 \text{ mg/l}$$

Maximum Daily Concentration

$$= [(200.0 \text{ lbs/day}) / (8.34 \times 10^{-6})] \times (682,834 \text{ gallons/day}) = 35.1 \text{ mg/l}$$

4. Total Ammonia

Monthly Average Concentration

$$= 4.0 \text{ mg/L NH}_3\text{-N}$$

Maximum Daily Concentration

$$= 8.0 \text{ mg/L NH}_3\text{-N}$$

Monthly Average Loading

$$= 4.0 \text{ mg/L NH}_3\text{-N} \times [(8.34 \times 10^{-6}) \times (682,834 \text{ gallons/day})] = 22.8 \text{ lbs/day NH}_3\text{-N}$$

Maximum Daily Loading

$$= 8.0 \text{ mg/L NH}_3\text{-N} \times [(8.34 \times 10^{-6}) \times (682,834 \text{ gallons/day})] = 45.6 \text{ lbs/day NH}_3\text{-N}$$

5. Total Nitrogen

Monthly Average Concentration
= 134 mg/L N

Maximum Daily Concentration
= 194 mg/L N

Monthly Average Loading
= 134 mg/L N x [(8.34 x 10⁻⁶) x (682,834 gallons/day)] = 763 lbs/day N

Maximum Daily Loading
= 194 mg/L N x [(8.34 x 10⁻⁶) x (682,834 gallons/day)] = 1,105 lbs/day N

6. Hydrogen ion concentration (pH)

Federal technology-based requirements specify a pH range of 6.0 to 9.0 standard units (s.u.).

7. Fecal Coliform Bacteria

Federal technology-based requirements specify a maximum value of 400 colonies/100 ml at any time.

III. Water Quality-Based Limits

In addition to the technology-based limits, Section 301(b) of the Clean Water Act requires NPDES permits to include limits for all pollutants or parameters which “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” The limits must be stringent enough to ensure that water quality standards are met (see Section III.B. above). Therefore, the effluent limitations specified in an NPDES permit are developed from both technology available to treat the pollutants (“technology-based limits”) and limits that are protective of the designated uses of the receiving water (“water quality-based limits”). For a pollutant for which both technology-based and water quality-based limits exist, the more stringent limits will be included in the permit.

In determining whether water quality-based limits are needed and developing those limits when necessary, EPA uses the approach outlined below:

1. Determine the appropriate water quality criteria
2. Determine whether there is “reasonable potential” to exceed the criteria
3. If there is “reasonable potential,” then develop a wasteload allocation (WLA)
4. Develop effluent limitations based on WLAs

5. Compare to technology-based limits and apply the more stringent limits

A. Calculations

This section describes the process of how water quality-based effluent limits (WQBELs) were calculated. The calculations were performed according to procedures outlined in Chapter 5 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA, 1991).

1. Biochemical Oxygen Demand (BOD₅) and Dissolved Oxygen (DO)

a. Determine the appropriate water quality criteria

Washington State Water Quality Standards specify numeric criteria for dissolved oxygen concentrations in the receiving water (WAC 173-201A-030(2)(c)(ii)). For freshwater, dissolved oxygen shall exceed 8.0 mg/l. BOD concentrations in the effluent can affect the dissolved oxygen concentrations in the receiving water.

b. Determine acceptable effluent limits based on criteria

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (*i.e.*, anti-backsliding). Clean Water Act Section 402(o)(2), however, does set forth some exceptions to anti-backsliding. One of the exceptions states that a less stringent effluent limitation can be included in a reissued permit if “information is available which was not available at the time of permit issuance and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.” See Clean Water Act Section 402(o)(2)(B)(i).

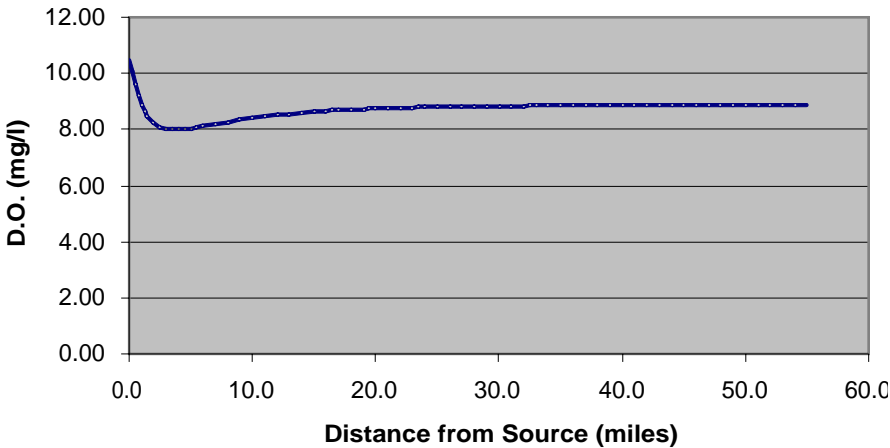
Here, the previous effluent limits for BOD were water quality-based to ensure that the discharge did not cause or contribute to a water quality violation. During the previous permit cycle, Washington Beef conducted extensive effluent monitoring and provided this data in its permit renewal application. This new monitoring information justifies the application of a less stringent effluent limitations. Specifically, based on the current effluent and receiving water monitoring data, a reasonable potential analysis was conducted using the Streeter-Phelps equation to determine effluent limits for BOD that ensure DO criteria would not be exceeded.

The following tables and chart summarize the input data and modeling results:

Input Characteristics of System (User Input in Green Areas)

River - Upstream		DO Saturation	
Width (ft)	23.74	H2O Temp (deg C)	20.72
Depth (ft)	1.40	Elevation ft	300
Flow (cfs)	11.30	DOsat	8.87
BOD (mg/l)	5.00		
DO (mg/l)	10.90		
Discharge		Output Control	
Flow (cfs)	1.06	Distance Increment (mi)	1
BOD (mg/l)	48.20	Distance Increment (ft)	5280.00
DO (mg/l)	5.75		
River - Downstream			
Q (cfs)	12.36		
Velocity (fps)	0.37		
Reaeration Rate	4.75		
Deoxy. Rate	0.75	at 20 deg C	
Deoxy. Rate	0.78	at H2O Temp (above)	

Point Source Impact on Dissolved Oxygen



Model Output

X (miles)	time (day)	BODriv	DO Deficit	DO(x)
0.0	0.00	8.69	-1.59	10.46
1.0	0.16	7.65	-0.01	8.88
2.0	0.33	6.74	0.62	8.25
3.0	0.49	5.93	0.84	8.03
4.0	0.66	5.22	0.87	8.00
5.0	0.82	4.60	0.83	8.04
6.0	0.99	4.05	0.76	8.11
7.0	1.15	3.56	0.68	8.19
8.0	1.31	3.14	0.61	8.26
9.0	1.48	2.76	0.54	8.33
10.0	1.64	2.43	0.47	8.40
11.0	1.81	2.14	0.42	8.45
12.0	1.97	1.88	0.37	8.50
13.0	2.14	1.66	0.32	8.55
14.0	2.30	1.46	0.28	8.59
15.0	2.47	1.29	0.25	8.62
16.0	2.63	1.13	0.22	8.65
17.0	2.79	1.00	0.19	8.68
18.0	2.96	0.88	0.17	8.70
19.0	3.12	0.77	0.15	8.72
20.0	3.29	0.68	0.13	8.74
21.0	3.45	0.60	0.12	8.75

Based on the modeling results, the technology-based maximum daily limit of 92.2 mg/l BOD has the potential to cause a violation in water quality standards. The modeling results indicate that a water quality-based daily maximum limit of 48.2 mg/l will ensure the discharge does not violate water quality standards. Therefore, the draft permit proposes the following effluent concentration-based and mass-loading limits for BOD:

Effluent Parameter	Unit of Measurement	Monthly Average ²	Maximum Daily
Biochemical Oxygen Demand (BOD ₅)	mg/L	46.1	48.2
	lbs/day ¹	263	274
¹ Effluent limits based on a 95 th percentile daily flow of 682,834 gallons per day			
² Technology-based effluent limit.			

Based on the effluent monitoring data from January 2000 to December 2004, the Washington Beef facility will be able to meet the proposed maximum daily and monthly average limits for BOD.

2. Turbidity and Total Suspended Solids (TSS)

a. Determine the appropriate water quality criteria

Washington State Water Quality Standards (WAC 201(A)030(2)(c)(vi)) specify that the receiving water shall not exceed 5 Nephelometric Turbidity Units (NTU) above background when background concentrations are ≤ 50 NTU. Monitoring data for the receiving water indicated an average background concentration of 5.78 NTU. Therefore, a numeric criteria of 10.78 NTU was calculated at the edge of the mixing zone for Outfall 002.

b. Determine acceptable effluent limits based on criteria

Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (*i.e.*, anti-backsliding). Clean Water Act Section 402(o)(2), however, does set forth some exceptions to anti-backsliding. One of the exceptions states that a less stringent effluent limitation can be included in a reissued permit if “information is available which was not available at the time of permit issuance and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.” See Clean Water Act Section 402(o)(2)(B)(i).

The current TSS limits were water quality-based to ensure that the discharge did not cause or contribute to a water quality violation for turbidity. However, the

water quality criteria was incorrectly incorporated in the previous permit by specifying a numeric criterium of 50 NTU. In addition, the previous calculations were based on the assumption that TSS and turbidity were directly correlated with 1 mg/l equal to 1 NTU. As a result, new effluent limits based directly upon recent monitoring data for turbidity were developed using the following approach:

- i. A wasteload allocation (WLA) of 60.36 NTU at the end-of-pipe was calculated using the following equation:

$$WLA = C_R \times D_f$$

where,

C_R = numeric criterium of 10.78 NTU for turbidity (average background concentration is 5.78 NTU) and

D_f = dilution factor of 5.6 at the edge of the mixing zone for outfall 002¹

- iii. Convert waste load allocation (WLA) to Long Term Average (LTA) for criterium using the following equation:

$$LTA = WLA \times e^{(0.5\sigma n^2 - z\sigma n)}$$

where,

$$\sigma_n^2 = \ln(CV^2/n + 1) = 0.084$$

n = number of sampling events required per month = 4 (default value)

z = 2.326 for 99th percentile probability basis

$$LTA = 19.61$$

- iv. Calculate maximum daily and average monthly concentration-based limits (MDL and AML).

$$MDL = LTA \times e^{(z\sigma - 0.5\sigma^2)}$$

where,

$$\sigma^2 = \ln(CV^2 + 1) = 0.300$$

CV = coefficient of variation = 0.5916

z = 2.326 for 99th percentile probability basis

$$MDL = 60.4 \text{ NTU}$$

$$AML = LTA \times e^{(z\sigma n - 0.5\sigma n^2)}$$

where,

$$\sigma_n^2 = \ln(CV^2/n + 1) = 0.084$$

CV = coefficient of variation = 0.5916

n = number of sampling events required per month = 4 (default value)

¹ Brown and Caldwell, 1993

$$z = 1.645 \text{ for } 95^{\text{th}} \text{ percentile probability basis}$$

$$\text{AML} = 30.3 \text{ NTU}$$

The draft permit proposes the following effluent concentration-based limits for turbidity:

Effluent Parameter	Unit of Measurement	Monthly Average	Maximum Daily
Turbidity	NTU	30.3	60.4

Based on the effluent monitoring data from January 2000 to December 2004, the Washington Beef facility will be able to meet the proposed maximum daily and monthly average limits for turbidity. The revised draft permit also includes the technology-based limits for TSS.

3. Oil and Grease

Similar to the current effluent limits for BOD and TSS, the previous effluent limits for oil and grease were water quality-based to ensure that the discharge did not cause or contribute to a water quality violation. The draft permit proposes the following effluent concentration-based and mass-loading limits for oil and grease:

Effluent Parameter	Unit of Measurement	Monthly Average	Maximum Daily
Oil and Grease	mg/L	10	15
	lbs/day ¹	57	85
¹ Effluent limits based on a 95 th percentile daily flow of 682,834 gallons per day			

4. Fecal Coliform Bacteria

In addition to the federal technology-based requirements, Washington water quality standards (WAC 173-201A-030(2)(c)(i)(A)) specify for Class A surface waters that the fecal coliform organism levels shall not exceed a geometric mean value of 100 colonies/100 mL, and not have more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL. Therefore, the draft permit proposes the following effluent limits:

Effluent Parameter	Unit of Measurement	Monthly Average	Maximum Daily
Fecal Coliform Bacteria ¹	# / 100 ml	100	400
¹ no more than 10 percent of all samples obtained for calculating the geometric mean value shall exceed 200 colonies/100 mL.			

5. Hydrogen ion concentration (pH)

In addition to the federal technology-based requirements, Washington water quality standards for aquatic life specify pH limits of 6.5 to 8.5 standard units (WAC 173-201A-030(2)(c)(v)). Therefore, the draft permit proposes a pH limit of 6.5 to 8.5.

6. Temperature

Washington water quality standards specify numeric temperature criteria for Class A surface waters (WAC 173-201A-030(2)(c)(iv)). Temperatures shall not exceed 18 °C for freshwater and when natural conditions exceed 18 °C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3 °C. Therefore, the draft permit proposes a maximum temperature limit of 18 °C.

7. Total Ammonia (NH₃ as N)

a. Determine the appropriate water quality criteria

Ammonia is considered a toxic substance to aquatic organisms and state water quality standards specify numeric criteria for cold water biota depending upon pH and temperature of the receiving water (WAC 173-201A-030(2)(c)(vii) and 173-201A-040). Based on current monitoring data, the 95th percentile temperature (20.56 °C) and pH (7.62 s.u.) were used to calculate an acute criterion of 12.60 mg/L and a chronic criterion of 1.60 mg/L total ammonia (NH₃ as N).

b. Determine whether there is “reasonable potential” to exceed the criteria

- i. Flow of Wanity Slough: Typically, the 1Q10 or 1-day low flow that has a 10 percent chance of occurring in any given year and 7Q10 or 7-day average low flow that has a 10 percent chance of occurring in any given year are used to calculate reasonable potential. Given the lack of historical flow data for the Wanity Slough, the lowest calculated flow of 11.3 cfs (Brown and Caldwell, 1993) was used instead of the 1Q10 and 7Q10 flows.
- ii. Mixing zones: The criteria were compared to the 95th percentile receiving water or “background” ammonia concentration of 0.60 mg/L total ammonia (NH₃ as N)². Since the receiving water or background concentration of ammonia is less than the acute and chronic criteria, a mixing zone was

² Using the Grubb’s statistical test, the October 1994 ammonia result of 1.35 mg/L was determined to be an outlier and not included in the calculation of the background ammonia concentration.

incorporated into the reasonable potential calculations for ammonia. In accordance with Washington State Water Quality Standards (WAC 173-201A-100-7), twenty-five percent of the lowest calculated flow (*i.e.*, 11.3 cfs) was used to calculate reasonable potential.

- iii. There is reasonable potential to exceed water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criteria. The maximum projected concentration is calculated from the following equation:

$$C_R = \frac{(C_E \times Q_E) + (C_S \times Q_S \times \%MZ_S)}{Q_E + (Q_S \times \%MZ_S)}$$

where,

Nomenclature	Parameter	Value
	acute criterion	12.60 mg/l
	chronic criterion	1.60 mg/l
C _{R-Acute}	projected receiving water concentration (acute) at the edge of the mixing zone in Wanity Slough	11.06 mg/l
C _{R-Chronic}	projected receiving water concentration (chronic) at the edge of the mixing zone in Wanity Slough	11.06 mg/l
C _E	maximum projected effluent concentration from Washington Beef LLC = C _{max} × RPM where C _{max} is the maximum reported effluent concentration (48.5 mg/L) and RPM is the reasonable potential multiplier (0.71)	34.51 mg/L
C _S	upstream concentration of pollutant in Wanity Slough	0.60 mg/l
Q _E	maximum effluent flow from Washington Beef LLC	1.26 cfs
Q _S	upstream flow in Wanity Slough ♦ lowest calculated flow	11.3 cfs
%MZ _S	mixing zone of Wanity Slough (% of flow volume, background < criteria)	25%

The projected chronic ammonia concentration at the edge of the mixing zone in the receiving water (*i.e.* Wanity Slough) is greater than the respective criterion. Therefore, there is reasonable potential for the discharge from the Washington Beef facility to cause an exceedance of the numeric criterion for total ammonia.

c. Effluent Limitation Calculation

- i. Determine waste load allocations (WLA_{a,c} and WLA_c) using both acute and chronic criteria, respectively, in the following equation:

$$C_R = \frac{(C_E \times Q_E) + (C_S \times Q_S \times \%MZ_S)}{Q_E + (Q_S \times \%MZ_S)}$$

where,

Nomenclature	Parameter	Value
$C_{R \text{ (Acute)}}$	receiving water concentration at the edge of the mixing zone in Wanity Slough equals acute criterion	12.60 mg/l
$C_{R \text{ (Chronic)}}$	receiving water concentration at the edge of the mixing zone in Wanity Slough equals chronic criterion	1.60 mg/l
C_E	waste load allocation for Washington Beef LLC	
C_S	upstream concentration of pollutant in Wanity Slough	0.60 mg/l
Q_E	maximum effluent flow from Washington Beef LLC	1.26 cfs
Q_S	minimum upstream flow in Wanity Slough	11.3 cfs
%MZ _S	mixing zone of Wanity Slough (% of flow volume, background < criteria)	25%

For acute criteria: $WLA_{a,c} = C_E = 44.68 \text{ mg/L}$

For chronic criteria: $WLA_c = C_E = 4.27 \text{ mg/L}$

- b. Convert the waste load allocation (WLA) to Long Term Average (LTA) for acute and chronic criteria using the following equation:

$$LTA_{a,c} = WLA_{a,c} \times e^{(0.5\sigma^2 - z\sigma)}$$

where,

$$\sigma^2 = \ln(CV^2 + 1) = 2.31$$

CV = coefficient of variation = 3.01

$z = 2.326$ for 99th percentile probability basis

$$LTA_{a,c} = 4.13$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_n^2 - z\sigma_n)}$$

where,

$$\sigma_n^2 = \ln(CV^2/n + 1) = 1.18$$

n = number of sampling events required per month = 4 (default value)

$z = 2.326$ for 99th percentile probability basis

$$LTA_c = 0.61$$

- c. Determine the lower (more limiting) of the two long-term averages ($LTA_{a,c}$ and LTA_c) and use to calculate maximum daily and average monthly limits (MDL and AML).

$$LTA = \text{minimum } (LTA_{a,c}, LTA_c) = LTA_c = 0.61$$

$$MDL = LTA \times e^{(z\sigma - 0.5\sigma^2)}$$

where,

$$\sigma^2 = \ln(CV^2 + 1) = 2.31$$

CV = coefficient of variation = 3.01

$z = 2.326$ for 99th percentile probability basis
MDL = 6.6 mg/L

$$AML = LTA \times e^{(z\sigma_n - 0.5\sigma_n^2)}$$

where,

$$\sigma_n^2 = \ln(CV^2/n + 1) = 1.18$$

CV = coefficient of variation = 3.01

n = number of sampling events required per month = 4 (default value)

$z = 1.645$ for 95th percentile probability basis

AML = 2.0 mg/L

d. Calculate maximum daily and average monthly mass-based limits.

Monthly Average Loading

$$= 2.04 \text{ mg/L} \times 8.34 \times 10^{-6} \times 682,834 \text{ gallons/day} = 11.6 \text{ lbs/day}$$

Maximum Daily Loading

$$= 6.64 \text{ mg/L} \times 8.34 \times 10^{-6} \times 682,834 \text{ gallons/day} = 37.8 \text{ lbs/day}$$

The draft permit proposes the following effluent limitations for ammonia:

Effluent Parameter	Unit of Measurement	Monthly Average	Maximum Daily
Ammonia (NH ₃ -N)	mg/L	2.0	6.6
	lbs/day ¹	11.6	37.8
¹ Effluent limits based on the 95 th percentile flow of 682,834 gallons per day.			

Based on the effluent monitoring data from January 2000 to December 2004, the Washington Beef facility would not be able to meet the proposed monthly average and maximum daily limits approximately 8.2% and 1.2% of the time, respectively. Washington State Water Quality Standards (WAC 173-201A-160(4)) indicate that discharge permits for point sources may incorporate schedules for achieving compliance with water quality criteria. Federal requirements for schedules of compliance are specified under 40 CFR §122.47 and include submittal of annual progress reports to EPA. The draft permit proposes the following milestones in regards to the annual reports.

Schedule of Compliance for Total Ammonia		
Task No.	Due at End of Year	Task Activity
1	1	<p>Source investigation. The permittee must investigate the sources, extent, transport, and fate of total ammonia in outfall 002.</p> <p>Deliverable: The permittee must prepare a progress report of findings, and recommendations for further actions to reduce total suspended solids.</p>
2	2	<p>Feasibility study. The permittee must investigate the feasibility of measures to reduce total ammonia in outfall 002 to meet the effluent limits. Evaluations should consider short- and long-term aspects of: 1) effectiveness of the measures (e.g. affords long-term protection, minimizes short term environmental impacts, and complies with effluent limits); and 2) implementability of the measures (e.g., technical feasibility).</p> <p>Readily implementable measures must be designed and constructed as soon as feasible. Measures that are more technically difficult or have more unknowns may need further investigations.</p> <p>Deliverable: The permittee must submit: 1) A report of the findings on the feasibility of measures; and 2) Design documents and/or construction completion reports for those measures that are readily implemented.</p>
3 ¹	3	<p>Design and construction. The permittee must complete construction and operate measures such that effluent limits for total ammonia in outfall 002 are achieved.</p> <p>Deliverable: The permittee must submit construction completion reports.</p>
¹ Tasks scheduled past Year 2 are listed in anticipation of potential unknown conditions. The permittee does not need to complete these later tasks if compliance with the effluent limits is achieved sooner.		

State water quality standards (WAC 173-201A-160(4)(b)) specify that interim effluent limits shall be established for the period of time during which compliance with water quality criteria is deferred. Therefore, the draft permit includes the current effluent limits for total ammonia as interim limits during this period of time.

APPENDIX D
ENDANGERED SPECIES ACT

I. Threatened and Endangered Species

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Oceanic and Atmospheric Administration-Fisheries (NOAA-Fisheries) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species. In correspondence dated October 24, 2002, NOAA-Fisheries indicated that Wanity Slough and Marion Drain both support small numbers of the Middle Columbia steelhead (*Onchorynchus mykiss*) which has been listed as threatened in the Middle Columbia River basin. In a letter dated September 30, 2003, the USFWS identified the following federally-listed species in the vicinity of the discharge:

Endangered Species:

none

Threatened species:

Bald eagle (*Haliaeetus leucocephalus*)

Middle Columbia River steelhead (*O. mykiss*)

Bull Trout (*Salvelinus confluentus*)

Ute ladies'-tresses (*Spiranthes diluvialis*)

II. Potential Effects for Species

A. Bald eagle (*Haliaeetus leucocephalus*)

Bald eagles begin to appear at wintering sites in early November and concentrate at locations with open water during the colder months when smaller or slower moving waterbodies freeze (Spahr 1990). Diet includes fish species, mule deer, ground squirrels, rabbits, waterfowl, and other small mammals (Spahr 1990). Consumption of fish relative to other species declines in the colder months as water bodies freeze. Water quality could potentially affect bald eagles through four avenues: prey displacement or quantitative decline, prey mortality, bioaccumulation in prey, or direct consumption. One of the general recommendations for augmenting bald eagle populations is to reduce mortality through exposure to contaminants. The bald eagle historically ranged throughout North America except for extreme northern Alaska and Canada and central and southern Mexico. A significant population of bald eagles winters in Washington and some are presumed to remain in the state year round. As discussed above, the primary threats to bald eagles are prey displacement or mortality, bioaccumulation of contaminants through prey species, or direct exposure to contaminants. Reissuance of the NPDES permit for the Washington Beef facility would not affect prey availability/distribution. Additionally, it would not result in a potential increase of toxic compounds in prey species or an increase in the potential for direct exposure to toxics. The proposed permit requires monitoring for potentially harmful contaminants, hence, it is not expected that reissuance of the wastewater discharge permit would affect the bald eagle.

B. Middle Columbia steelhead (*Onchorynchus mykiss*)

Steelhead have the most complex life histories of any Pacific salmon species. These fish have variable run timing and degree of anadromy and are capable of more than one spawning cycle. Inland steelhead of the Middle Columbia River Basin are 'stream-maturing' as they enter freshwater in a sexually immature state and require several months in freshwater before they mature and spawn. These stream maturing fish are referred to as 'summer run' based on the time that they enter freshwater. Summer steelhead of the Columbia River subbasin have generally one potential run timing, which is the A-run. The A-run fish have generally spent one year in the ocean and enter freshwater from June to August.

Steelhead can have various life histories in terms of the degree of anadromy. The anadromous form that migrates between the ocean and freshwater are termed 'steelhead' while the non- anadromous or 'resident' form does not migrate and is called 'rainbow trout'. Like steelhead, rainbow trout spawn in winter/spring and emerge in spring/early summer. In inland *O. mykiss* populations, including the Middle Columbia River basin, both anadromous and non- anadromous forms commonly co-occur. Nonanadromous *O. mykiss* of the inland type are often called Columbia River redband trout. Although both the anadromous and non-anadromous forms are classified as the same species, taxonomically, the relationship of the two forms in a given area is typically unclear.

Dam construction (which restricts the ability of individuals to reach their spawning areas) and habitat loss and degradation due to human activities such as land development, logging, mining, and agriculture are the primary factors that have affected Steelhead populations. EPA has determined that the reissuance of the NPDES permit for the Washington Beef facility will not impact steelhead populations because it will not lead to increased dam construction or result in habitat loss or degradation.

C. Bull Trout (*Salvelinus confluentus*)

The bull trout is a member of the char subgroup of the family Salmonidae. Bull trout population are known to exhibit two distinct life history forms: 1) resident bull trout that spend their entire life cycle in the same (or near) streams in which they were hatched, and 2) migratory bull trout which can exhibit either a fluvial life history - spawning in tributary streams where the young rear from one to four years before migrating to a river, or an adfluvial form - spawning in tributary streams where the young rear before migrating to a lake (Farley and Shepard 1989).

Bull trout generally mature at between 5 and 7 years of age (Farley and Shepard 1989; Goetz 1989; Leathe and Enk 1985). Spawning occurs from August through November (Armstrong and Murrow 1980; Brown 1994; McPhail and Murray 1979). Embryos incubate over winter and hatch in late winter or early spring (Weaver and White 1985). Emergence has been observed over a relatively short period of time after a peak in stream discharge from early April through May (Rieman and McIntyre 1993). In-stream habitat requirements make bull trout exceptionally sensitive to activities which directly or indirectly affect stream channel integrity and natural flow patterns, including groundwater flow. Stream flow, bed load movement, and channel instability influence the survival of juvenile bull trout (Weaver 1985; Goetz 1989). The presence of fine sediments reduces pool depth, alters substrate

composition, reduces interstitial spaces in substrate, and causes channel braiding, all of which can negatively impact the survival of bull trout eggs and fry. Cover, such as large woody debris, undercut banks, boulders, pools, side margins, and beaver ponds, is heavily utilized by all life stages of bull trout for rearing, foraging and resting habitat, as well as for protection from predators (USFWS) 1998a). Bull trout prefer cold water, and temperatures in excess of 15 °C are considered to limit their distribution (Rieman and McIntyre 1993). USACE (1999) suggested that water temperature influences bull trout distribution more than any other habitat factor. Finally, migration corridors are important for sustaining bull trout populations, allowing for gene flow and connecting wintering areas to summer/foraging habitat (Rieman and McIntyre 1993).

The bull trout is threatened by habitat degradation (e.g. land management activities with negative impacts on water quality or spawning habitat); passage restrictions, mortality, or entrapment at dams; and competition from non-native lake and brook trout (USFWS 1998b). According to USACE (1999), bull trout populations are likely affected by dam operation, as well as, augmentation (i.e., spill) used to mitigate effects on salmon migration by increasing fish passage efficiency. Bull trout growth, survival and long-term population persistence are correlated with stream habitat conditions such as cover, channel stability, substrate composition, temperature, and migratory corridors (Rieman and McIntyre 1993). These habitat features are often impaired as the result of land management activities such as forest harvest, road building, hydropower development, irrigation diversions, mining and grazing. EPA has determined that the reissuance of the NPDES permit for the Washington Beef facility will not impact bull trout populations because it will not lead to increased habitat degradation or changes in water temperature. The effluent limitations in the permit are based on the state water quality standards which protect for cold water biota including salmonid species. In addition, the facility is required to monitor the effluent and receiving water in order to assist with future efforts to evaluate the reasonable potential for the discharge to cause or contribute to the receiving waters not meeting applicable state/tribal water quality criteria and the development of water quality-based effluent limits.

D. Ute ladies' - tresses (*Spiranthes diluvialis*)

Ute ladies' - tresses is a perennial terrestrial orchid (family Orchidaceae). This species generally inhabits riverbanks where inundation occurs infrequently (Sheviak 1984). Ute ladies' tresses is endemic to moist soils in mesic or wet meadows near springs, lakes, and perennial streams. The elevation range of known occurrences is 4,000 to 7,000 feet. Generally, this species occurs in areas where the vegetation is relatively open (e.g. grass and forb dominated sites), but some populations are found in riparian woodlands. This orchid is found in several areas of the interior western United States. This species has only recently been recorded on a few sites in central Washington, where it can occur at relatively low elevations (down to roughly 700 feet in Chelan County). The primary threats to the species are urban development and watershed alterations in riparian and wetland habitats and invasions of exotic plants species such as purple loosestrife, whitetop and reed canary grass. The reissuance of the NPDES permit will not affect any of these factors and, consequently, will have no impact on this species.

EPA will provide USFWS and NOAA-Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from these agencies regarding this determination will be considered prior to issuance of this permit.

APPENDIX E

ESSENTIAL FISH HABITAT ASSESSMENT

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act requires EPA to consult with the National Oceanic and Atmospheric Administration-Fisheries (NOAA-Fisheries) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore no consultation is required.

This fact sheet and the draft permit will be submitted to NOAA-Fisheries for review during the public notice period. Any recommendations received from NOAA-Fisheries regarding EFH will be considered prior to final reissuance of this permit.

NOAA-Fisheries has requested that EFH assessments contain the following requirements:

1. Species in the Facility Area. NOAA-Fisheries recommended the following websites for specific EFH information relating to the project area:

<http://www.nwr.noaa.gov/1habcon/habweb/msa.htm>.

The Habitat Assessment Reports stated Wanity Slough has not been designated to support any species for EFH.

2. Facility Description and Discharge Location. The facility activities and wastewater sources are described in Part II of this Fact Sheet, and the discharge location is described in Part III.

3. EFH Evaluation. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge for the following reasons:

- a. The proposed permit has been developed in accordance with the Washington water quality standards to protect aquatic life species in Wanity Slough. The NPDES permits are established to protect water quality in accordance with State water quality standards. The standards are developed to protect the designated uses of the waterbody, including growth and propagation of aquatic life and wildlife.
- b. The derivation of permit limits and monitoring requirements for an NPDES discharger include the basic elements of ecological risk analysis as specified in the Technical Support Document (TSD) (EPA, 1991). This analysis includes, but is not limited to, the following: effluent characterization, pollutants of concern identification, threshold concentration determination, exposure considerations, dilution modeling and analysis, multiple sources and natural background consideration, fate and transport variability, and monitoring duration and frequency.

APPENDIX F
ANTIDEGRADATION

In addition to water quality-based limitations for pollutants that could cause or contribute to exceedances of numeric or narrative criteria, EPA must consider the State's antidegradation policy (WAC 173-201A-070). This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality meets the standard. For high quality waters, the antidegradation provisions require that the State find that allowing lower water quality is necessary to accommodate important economic or social development before any degradation is authorized. If water quality is better than necessary to meet the water quality standards, increased permit limits can be authorized only if they do not cause degradation. The proposed maximum daily limits for BOD and TSS in the draft permit are higher than those in the current permit. The proposed limits are still protective of the beneficial uses because they are water quality-based effluent limits.

The antidegradation policy of the state of Washington is stated as follows:

- i. Existing beneficial uses shall be maintained and protected and no further degradation which would interfere with or become injurious to existing beneficial uses shall be allowed.
- ii. Whenever the natural conditions of said waters are of a lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria.
- iii. Water quality shall be maintained and protected in waters designated as outstanding resource waters.
- iv. Whenever waters are of a high quality than the criteria assigned for said waters, the existing water quality shall be protected and pollution of said waters which will reduce the existing quality shall not be allowed, except in those instances where:
 - (1) It is clear, after satisfactory public participation and intergovernmental coordination, that overriding considerations of the public interest will be served;
 - (2) All wastes and other materials and substances discharged into said waters shall be provided with all known, available, and reasonable methods of prevention, control, and treatment by new and existing point sources before discharge. All activities which result in the pollution of waters from nonpoint sources shall be provided with all known, available, and reasonable best management practices; and
 - (3) When the lowering of water quality in high quality waters is authorized, the lower water quality shall still be of high enough quality to fully support all existing beneficial uses.